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AUTHOR Griffin, Patrick; And Others
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ABSTRACT

This paper outlines the conceptual framework underpinning the development of competency rating scales for adult literacy. It provides a rationale for a project that was conducted in Australia during International Literacy Year (1990) to develop appropriate ratings scales to assess adults' literacy and numeracy skills. The paper examines the construct of literacy, defining pragmatic, cultural, functional, survival, or marginal adult literacy and suggesting that there can be many types and levels of literacy. Types of literacy identified include reading, writing, numeracy, document processing, and combined skills. Three levels of literacy are proposed as useful: basic (minimum levels for gaining access to a culture); required (the skills necessary for a given social context, which may change over time); and an improvement level of literacy where an individual is able to take control of his or her life. Since these levels and types of literacy exist, there is a basis for developing a set of rating scales for them, according to the paper. The paper provides several suggested methods of developing competency rating scales and profiles, included the preferred process used in the Australian project in which the starting point was the behaviors exhibited by persons in establishing literacy. (31 references) (KC)

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Developing Competency Rating Scales in Adult Literacy: An Analytical Approach.

Patrick Griffin,
Rosemary Jewell,
Anne Forwood
Robyn Francis.

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This paper outlines the conceptual framework underpinning the development of competency rating scales for adult literacy. The paper examines the construct of literacy and outlines a process for identifying indicators of literacy development. The use of these indicators in forming a set of competency rating scales is then outlined.

Literacy:

The literature provides us with many different definitions of literacy and many different contexts in which the word literacy is used. Two things are clear. First, it is not a neutral term and second there are no precise definitions of the term. Literacy seems always to have emotional values attached to it. When we describe someone as literate or illiterate, our description of that person carries with it a large amount of emotional and value laden baggage. The term is like the words liberty, justice or happiness in that all have values associated with them. There will probably not be a generally agreed definition of literacy and there will probably not be a generally agreed way of measuring literacy. Hence there is likely to be no final resolution of the issue of who is literate and who is not or even if this is even a sensible focus of discussion.

Literacy programs are important. There are basic education programs in schools, colleges, tertiary institutions, in further education establishments and in the workplace. There are programs for workers, students, parents, and for social groups. The existence of these courses indicates that we are concerned as a society about a general lack of literacy, whatever we mean by the term.

We describe people as high or low in literacy or advanced in literacy. The notion of levels of literacy is emerging. The term literate now seems to describe a person who is above a minimum level of some quality rather than an upper or advanced level. Literacy programs are designed to help individuals reach a minimal level of skill that can be used to describe an individual as literate.

We have pragmatic, cultural, semi, conventional, functional, survival or marginal and functional adult literacy. These are mostly terms which are associated with an individual's ability to perform some function rather than just to know something. Function literacy has connotations of being practical, useful, and socially relevant. Cultural and functional literacy also carry a strong suggestion of the context dependency of what, in terms of competence level, literacy actually means. But, in considering models of linguistic competence, describing a structure and tieing this too narrowly to specific situations ("the why, the when and the where") creates a performance rather than a competence model (Hickman, in Nystrand, 1986,27).

The idea of "functional literacy" suggests that there is a non functional literacy. Survival literacy suggests that there is a non survival literacy. The use of the term "marginal literacy" suggests that there is a margin in which a person can exist outside the mainstream of literacy in society. Each of the terms suggests that there is a point at which a person transforms from one classification to the other. That is, an individual can move from being illiterate to literate; from being non function to functional; from non survival to survival or from the margins to the mainstream. What are the criteria for these transformations to take place and how can we recognise when the individual has changed status?

Venezky (1990) suggests that literacy requires a set of skills for processing reading and writing rather than a set of social skills that enable a person to cope or in fact to deceive and avoid the impact of literacy skills of others. There are many individual cases of persons who have become very successful in business and society without the reading and writing skills. These individuals usually employ others to read for them or engage in behaviour which avoids circumstances in which they must read. In many cases individuals with highly developed entrepreneurial skills create a culture in which they are not required to use these skills. In other cases, individuals may even go as far as deceit and avoidance in order to escape detection as a non reader. Cases such as these are common.

In the recent Australian national study of adult literacy (Wickert, 1989) many assumptions about the tasks tested were made. The selection of tasks was not based on any analysis of the social, workplace or personal literacy requirements of Australian adult population. The tasks were selected by North American researchers for the assessment of North American youth between the ages of 16 and 24. The tasks were divided into the areas of reading, numeracy and document processing. Writing was not assessed but its importance was defended in the assessment of literacy.

The approach was explained as follows:

> *It allows for the possibility of developing profiles not only of a person's literacy proficiencies but also of the literacy requirements of, say, particular occupations. And by using and analysing different kinds of literacy tasks at differing levels of complexity as the basis for assessment it allows for an assessment of the influence of a text construction itself as a contributory factor to literacy difficulty and does not assume that the "problem" always resides with the individual. Above all it acknowledges that to "function" in society is relative to individual needs and thus that different levels and types of literacy need to be identified, so that profiles of performance can be constructed on the basis of relevant and appropriate assessment tasks.* (Wickert, 1989,4)

This project focuses on identifying the types and levels of literacy to which Wickert refers. It does not address the literacy requirements of particular occupations that she recommends. As explained in later sections of this paper, the project follows Wickert's advice by "...analysing different types of literacy tasks at differing levels of complexity as the basis of assessment..."

Types of Literacy

The type of literacy skills may be different for adults than those required for children. Adults operate in a different social and cultural context. The school environment is a nurturing one in which literacy is taught under the guise of reading and writing skills perhaps through phonics and perhaps through a whole language approach. The general competencies are the focus of instruction rather than specific tasks to complete. The tasks are used for assessment purposes or as the vehicle of instruction. Many individuals develop these general competencies. Many do not. Adult basic education and workplace basic education are predominantly concerned with those who do not succeed in gaining literacy skills in the school environment.

This leaves the adult literacy field in a situation where it is necessary to identify the general competencies needed to function effectively, or the tasks which are needed in specific circumstances. Broad categories of skills which might be pertinent to the development of literacy have been identified in the literature. Kirsch and Jungeblut (1986) included four types of skills which are now generally included in definitions of literacy. These are reading, writing, numeracy and document processing. Generally there is no argument about the inclusion of reading in the definition of literacy. However, there is no agreement about what constitutes the basic or minimal level of competency in reading.

Reading:

The demands of the workplace environment for highly specific tasks to be performed appear to be moving workplace basic education towards a task driven education. Specific tasks are learned rather than language competencies. For those unable to read materials from a wide variety of texts, the information they can use and the skills they apply, or can be trained to apply, have had to become very narrow and very highly focussed. These people need to be trained in processing information for highly specific tasks. Nevertheless they need a basic set of information processing skills which have become defined as literacy skills. Many of these presume some very basic reading skills.

Writing

There is no longer much argument about the inclusion of writing in the definition of literacy. For some time, writing was considered a practical task for which some individuals had the "knack". With the work of Graves in process writing, this area of literacy has come to be seen as more than a practical task. Much of the cognitive research related to writing focuses on the componential theory of intelligence proposed by Sternberg, which identifies the elements of performance to do with strategies and plans. For example, in the area of writing instruction, Flower has registered a fundamental shift from analysis of written products to the focus on the interconnecting process of thinking, learning and writing (Hayes and Flower, 1986). In the socio-cognitive approach taken by Nystrand (1986) the process of writing is one of negotiating understandings and meanings between writer and reader. In describing a scale of language competence, the identification of these "metacognitive" elements, those of the problem solving kind, is essential for a full and accurate representation of what happens when adults write.

Numeracy

A third area which is gaining increasing attention is numeracy. There is growing consensus that at least basic competence in numeracy is required for functional literacy although there is again no agreement about how much numeracy is required nor for that matter which basic numeracy skills are required. Numeracy beyond the basic operations and basic number systems is far too complicated and specialised to be included in a definition of basic literacy. Perhaps higher levels of numeracy and mathematical skills become part of the repertoire of performance of people who exhibit higher levels of literacy. Kirsch and Jungeblut (1986) confined their work to those numeracy operations that are essential for the meaning of print. These included basic addition and subtraction, comparisons, dates and time.

Document Processing

The fourth area which is now included in North American definitions of literacy is document processing. This has been a very difficult area to define in any way that enables an empirical analysis. Kirsch and Jungeblut (1986) study is the predominate study which introduced document processing as a component of literacy. The correlations found between this literacy scale and those based on the reading and comprehension of extended discourse (or prose), indicate that document processing may make an independent contribution to literacy development. Alternatively, document processing may be a sub skill of reading or of numeracy or of both. So the low correlations obtained may be an artefact of mixing restricted range components of two scales and then trying to correlate the scale to each. In other words the internal validity of the scales and the studies may be problematic and attempts to interpret the correlations may be misleading. Document processing may be an included component rather that a separate component. It has been limited to the ability to deal with different types of document formats such as job applications, TV time tables, advertisements, labels and so on.

The Combined Skills:

Not all of the skill areas play an equal role. They are not all equally important. Venezky, Wagner and Ciliberti (1990) argue that, while reading is primary to any definition of literacy, the other skills are secondary. Writing as a means of recording and communicating pre supposes reading. Otherwise it is a mechanical copying task. Reading pre supposes comprehension otherwise it is recognition and or recitation. Numeracy and document processing are supplementary to reading and have no role in literacy without it.

A skilled reader who has little numeracy skills and who does not know much about the format of the documents will still be able to get significant amounts of information from print. On the other hand persons specifically trained to complete particular forms and to place both quantitative and verbal information on those forms, may still stumble in an environment which requires different skills in print and may not have the literacy skills to move from one environment or task to another. In adult basic education the major concern is with those who do not read or read well. These individuals will need additional assistance in the fields of numeracy, writing and document processing (if the latter is a separate and discrete skill). Rather than thinking about the specific tasks, we need to be thinking about the skills that enable the tasks to be performed, and to think about the psychological and cognitive skills and competencies that underpin those tasks.

Levels of Literacy

Venezky, Wagner and Ciliberti (1990) argues that there are two fundamental levels of literacy - basic and required literacy. Basic literacy has connotations of minimal levels that are necessary for self sustained development. It is the acquisition of a set of basic skills which enable the individual to gain access to a culture. This might be called the access level.

Required literacy encompasses the set of skills that are necessary for a given social context and may change over time. When the individual moves into a set social context, which requires specific kinds of skills, such as in the work situation more specific competencies may be needed. For example, one might want to become the secretary of a local sporting

club, or to work in a particular job. These may incorporate the language, numeracy and document processing skills in varying degrees. Adjustment must be made if the skills are not already present, in order to develop to the required level of literacy. However, most of the research indicates that adults who have not acquired the language skills during their academic education at school, are unlikely to be able to be taught those generic competencies in the workplace (Sticht, 1988; Mickulecky, 1988; Phillipi, 1988,1990).

Grey (1956) in his UNESCO definition and Guthrie and Kirsch (1973) indicated that there may be a third level of literacy. They discussed the notion of an individual developing literacy to a point where they could control and improve their quality of life. Perhaps this is the basis for empowerment. It may not occur until an individual proceeds past the access and required levels and into the improvement level where an individual is able to set the parameters on what literacy skills are required. In other settings, it is the context, the work environment, the task and other people who set the requirements. When individuals have the skills to improve their own life, they are able to set the parameters themselves.

The notions that levels of literacy exist means that it is appropriate to pursue Glasser's definition of criterion scales (Haertel, 1984). That is we can define progressions of increasing proficiency in the kinds of literacy. We do not however need to be confined to precise definitions of the three levels above. A scale covering those arbitrary levels may be more useful if it were divided into a larger number of levels each indicating progress.

A Framework for Literacy Scales

A combination of the notion of kinds and levels of literacy yields a framework for the development of competency rating scales and profiles.

FACET	S	L	R	W	N	D
LEVEL						
Improve	x	x	x	x	x	x
Require	x	x	x	x	x	x
Access	x	x	x	x	x	x

The Content of the Scales

There are several methods available to identify the content of the scales. Cronbach (1978) offers an avenue of progress. He outlines a procedure which he calls the actuarial method. This involves finding individuals who already possess the characteristics which we seek to define and describe them. Groups of individuals become the yardsticks for the development

of the scale, at least in obtaining the criteria to place on the scales. This breaks us out of the dependence on testing and task analysis, and from the uneasy situation which links the competency to the task. Perhaps the most fruitful method of developing scales of literacy is to combine all of these approaches.

The combination can lead to the description of development in each of the kinds of literacy. If we can analyse the tasks to identify the underpinning competencies, we may be able to identify the evidence of development in each kind of literacy. This was the case in the development of the literacy profiles (Griffin, 1990, Victoria, 1990).

The initial procedure is to identify and classify tasks that are considered important in adult literacy. These may include the tasks of the NAEP tests but will also include many other tasks considered by teachers and those in the workplace to be important. An analysis of those tasks will identify underlying competencies and there may be several competencies associated with each task. This is an important reason to proceed with the actuarial analysis rather than rely on the sole use the test based approach. Testing might be deployed to help in interpreting the levels of a scale developed this way.

Alterative Approaches to Developing Scales

An alternative would be to take the approach adopted by the NAEP study of youth literacy and the Australian use of the test items for all adults. In that approach, set tasks were identified which were argued to represent the literacy tasks undertaken in every day life. Whether all Australian adults perform the same tasks as North American youth is not addressed. The tasks are based on the Kirsch and Jungeblut definition of each of the forms of literacy. The definitions described specific task types which could be tested such as computing the tip on a bill, completing a bank deposit slip or reading the label on a medicine bottle. Each of these tasks served to define functional literacy, which we discussed as being related to the required level of literacy.

If we return to the notion of adult literacy and its orientation towards tasks, the difficulty that the underpinning competencies might not transfer from one task to another suggests that sole use of the test item approach may not give sufficient information about literacy. Indeed we can define many tasks and test large numbers of individuals on those tasks. However if Mickelecky and others are correct, this may lead to difficulties in generalising beyond the specific tasks tested. Indeed Wickert (1989) reported only the results on specific tasks. There was no evidence presented or claims made about the generalisability of the results or even that the results could be developed into a scale of literacy.

The Preferred Process

The process adopted for this study begins with an analysis of the behaviours that individuals demonstrate in convincing teachers and others that these competencies have been established. For each competency identified as underpinning a particular task, we examine the kinds of behaviour that individuals exhibit - first that this competency is fully established, second that the competency may be just developing and third that the competency may be beginning or

even absent. This is illustrated in the figure below which represents a worksheet used for the process.

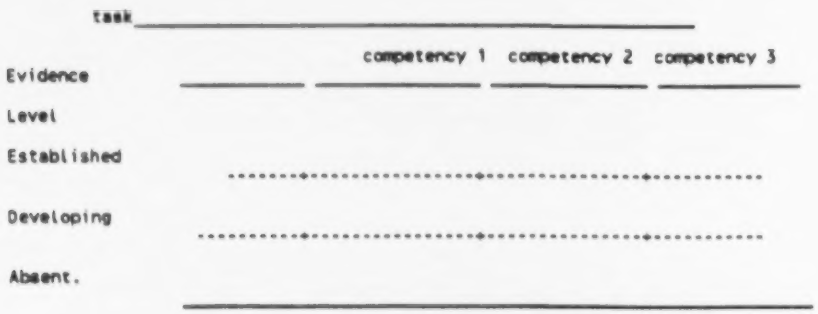

Figure 2
Worksheet for Identifying Evidence of Competency Development.

The evidence written in the cells of the table provides the indicators of literacy. They indicate that a competence is present, developing or absent. This becomes the data used in the development of the competency ratings scales of adult literacy.

Indicators of all of the competencies may be used in surveys of adults, using expert judges to cover as wide a range of development as possible in each of the kinds of literacy. They are sorted using an item response theory analysis (Masters, 1982) to form a descriptive criterion scale. The indicators in the descriptive scales can be organised according to their relationship to one another. There are possibly thousands of indicators and descriptions of personal behaviour that indicate different levels of literacy. Matrix sampling (Sirotnik, 1978) enables the use of a few indicators for each individual, and overlapping sets of indicators to map all of them onto a set of scales.

What emerges for each scale is a kind of pyramid of indicators. At the bottom of the pyramid are behaviours that almost everyone exhibits. At the top of the pyramid are behaviours that very few people exhibit. The relationship between the indicators is important. Indicators behave together to form a cohesive set within each of the major components or kinds of literacy. They must have an implicational relationship. That is an individual exhibiting behaviours at the top of the pyramid is likely to exhibit behaviours below that level. Exhibiting behaviours at any level does not imply that behaviours above are present, but it does imply that behaviours below are likely to be present. Behaviours which do not fit within this implicational relationship are excluded. This enables a cohesive set of behaviours to be identified which will eventually provide a set of competency rating scales from which individual profiles can be developed. Hence the kinds and levels of literacy development can be described in terms of observable behaviours.

Anchoring the Descriptive Scales

Because the scales will ultimately be judgement based, it is necessary to check their qualities. Judgements on descriptive scales have been shown to be unreliable unless accompanied by some form of moderation. The ASLPR, a descriptive scale used to report adult migrant levels of language development, has a training package associated with it, and extensive use of moderation procedures help to maintain levels among experienced users. The same

difficulties will develop with the Literacy Competency Scales unless moderation procedures are developed, trialed and validated. Some form of external calibration of raters judgements are also necessary. For numeracy and reading, this process is essentially simple. Various forms of standardised tests might be used to establish the properties of the scales.

Exclusive reliance on any single monitoring scheme is not appropriate. For example exclusive use of a test-based notion of literacy scales necessarily involves an assessor setting tasks for adults to perform in order to establish a level of literacy. This is particularly true of testing programs, given that tests are collections of tasks, normally administered by another person. Testing remains as an important as an external validation of the scales as are experiences of individuals, judgements of experts, and other means of assessing the literacy development against the profile scales. However few measures appear to be available across all of the scales. The NAEP item bank obviously offers one external check against which to anchor the descriptive scales. One other possible external anchor scale might be the Degrees of Reading Power (Burrill, 1987) a comprehension based test of reading based on close testing of extended prose of materials suitable for adults. In fact levels of performance have already been mapped onto an occupational scale for a major insurance company in the United States (Burrill, 1987). The reporting and assessment model proposed by Griffin, (1990a), indicates that the scales are the basis of communication. The actual assessment can take a variety of forms, tests, work-tasks, direct observation, projects, including self assessment.

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